AQA – Differentiation – AS Mathematics P2

1. June/2021/Paper_7356/2/No.8

It is given that $y = 3x - 5x^2$

Use differentiation from first principles to find an expression for $\frac{dy}{dx}$

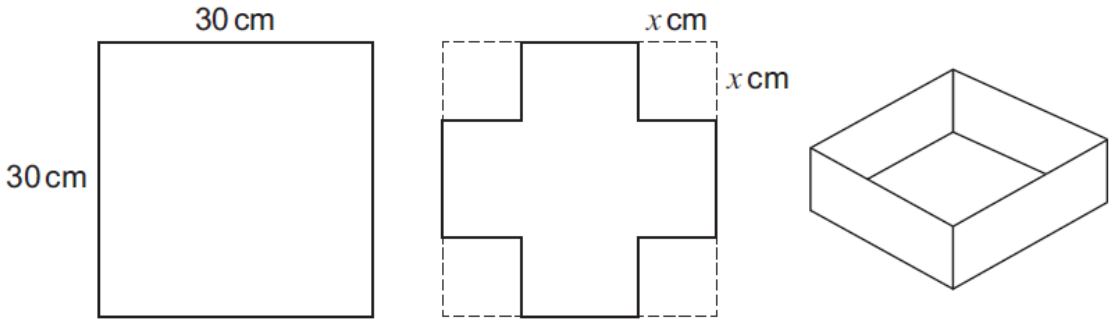
[4 marks]

2. June/2021/Paper_7356/2/No.10

A square sheet of metal has edges 30 cm long.

Four squares each with edge x cm, where $x < 15$, are removed from the corners of the sheet.

The four rectangular sections are bent upwards to form an open-topped box, as shown in the diagrams.



(a) Show that the capacity, C cm^3, of the box is given by

$$C = 900x - 120x^2 + 4x^3$$

[2 marks]

(b) Find the maximum capacity of the box.

Fully justify your answer.

[7 marks]